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(54) **Aerosol composition.**

(57) An aerosol composition containing a composite powder and one or more of propane, isobutane, n-butane and a liquefied petroleum gas (i.e., LPG) which is a mixture thereof, a chlorinated hydrocarbon and dimethyl ether.

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AEROSOL COMPOSITION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an aerosol composition having a very good dispersibility and an excellent useability due to a composite powder formulated therein. The aerosol composition of the present invention can be utilized in such fields as drugs, quasi-drugs, cosmetics, sterilizers, and lubricants.

2. Description of the Related Art

Usually, a powder spray comprising a powder dispersed in a liquefied gas propellant is used as a dry shampoo, food powder, sterilizer, lubricator, and dry type antisweat agent. The dry type antisweat agent presently used is widely sold on the market.

A Freon gas is widely used as the propellant for these powder sprays, due to its ease of handling.

Currently, because of the influence of this gas on the ozone layer, there is movement to restrict the use of Freon gas, and the present trend is toward a reduction of the amount of Freon gas used or finding a substitute therefor.

The powder spray gas generally contains, as the lubricator, talc, mica, silica, and spherical nylon, as a sweat preventive and deodorant, and powder of aluminum chloride, aluminum hydroxychloride, zinc oxide, and hydroxyapatite formulated therein.

If, however, the use of Freon (i.e., "CFC") gas as the propellant is restricted, the dispersibility of the powder is poor when these powders are formulated, and even when used after strong shaking, the powder may be sedimented during spraying, and thus it is not possible to ensure spraying for a relatively long period, of a uniform composition.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to obviate the above-mentioned problems and to provide an aerosol composition having an excellent dispersibility and useability even if Freon gas is not used or the amount of the Freon gas is restricted.

Other objects and advantages of the present invention will be apparent from the following description.

In accordance with the present invention, there is provided an aerosol composition comprising at least one propellant selected from the group consisting of propane, isobutane, n-butane, and a liquefied petroleum gas (abbreviated hereinafter as "LPG") which is a mixture thereof, a chlorinated hydrocarbon and dimethyl ether, and a composite powder.

In accordance with the present invention, there is also provided an aerosol composition comprising at least one propellant selected from the group consisting of propane, n-butane, and isobutane, at least one solvent selected from the group consisting of n-pentane, isopentane, and n-hexane, and a composite powder.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The composite powder usable in the present invention comprises one or more coating powder which becomes a sheath (hereinafter abbreviated as sheath powder) attached as a composite around the powder which becomes the core (hereinafter abbreviated as the core powder). The sheath powder can be selected from among inorganic powders and organic powders as desired.

As the core powder of the composite powder usable in the present invention, any desired organic powder with an average particle size of 0.1 to 100 μm can be used, and the powder used for the core can be in the form of a spherical, plate, granular, or needle, but in view of the feeling on the skin during use of the aerosol composition, the spheriod, granular or plate form is preferred.

Typical examples of the core powder of the composite powder are polyamides such as nylon 6, nylon

12, nylon 46, and nylon 66; polyolefins such as polyethylene and polypropylene; polystyrene; polyesters such as polyethyleneterephthalate and polycarbonate; acrylic resins such as polymethyl methacrylate and butyl acrylate-MMA copolymer; epoxy resins such as cured bisphenol A-epichlorohydrin copolymer; fluorine type resins such as polytetrafluoroethylene; silicone type resins such as methylpolysiloxane and crosslinked dimethylpolysiloxane; phenolic resins such as benzoguanamine resin; vinyl resins such as polyvinyl chlorid and polyvinyl methyl ether; polyurethane; cellulose; chitin; chitosan; fibroin; keratin; natural rubber; and so on.

The sheath powder, which is attached to the core powder to form the composite powder may have an average particle size of 1/5 or less, preferably 1/10 or less, of that of the core powder. If the average particle size of the sheath powder is larger than 1/5 of the average particle size of the core powder, the elimination stability of the sheath powder will be extremely poor.

Typical examples of the sheath powder usable in the present invention include, as inorganic powders in general, anhydrous silicic acid, magnesium silicate, talc, kaolin, bentonite, aerosil, mica, mica titanium, bismuth oxychloride, zirconium oxide, magnesium oxide, zinc oxide, titanium oxide, light calcium carbonate, heavy calcium carbonate, light magnesium carbonate, heavy magnesium carbonate, yellow iron oxide, red iron oxide, black iron oxide, ultramarine, carbon black, caramine hydroxyapatite, magnesium aluminometasilicate, magnesium aluminosilicate, aluminum hydroxychloride, aluminum chloride, aluminum sulfate, aluminum citrate, aluminum acetate, basic aluminum chloride, aluminum phenolsulfonate, aluminum β -naphtholdisulfonate, lead acetate, sodium perborate, aluminum zirconium octachlorohydrate, aluminum zirconium pentachlorohydrate, aluminum zirconium tetrachlorohydrate, aluminum zirconium trichlorohydrate, and zirconium chlorohydrate; as organic pigments, pearl pigments such as mica coated with titanium oxide, bismuth oxychloride coated with titanium oxide, talc coated with titanium oxide, fish scale, mica coated with colored titanium oxide; metal powder pigments such as aluminum powder and copper powder; organic pigments such as Red color No. 201, Red color No. 202, Red color No. 204, Red color No. 205, Red color No. 220, Red color No. 226, Red color No. 228, Red color No. 405, Orange color No. 203, Orange color No. 204, Yellow color No. 205, Yellow color No. 401, and Blue color No. 404; zirconium, barium or aluminum lake such as Red color No. 3, Red color No. 104, Red color No. 106, Red color No. 227, Red color No. 230, Red color No. 401, Red color No. 505, Orange color No. 205, Yellow color No. 4, Yellow color No. 5, Yellow color No. 202, Yellow color No. 203, Green color No. 3 and Blue color No. 1; as organic powders, polyamides such as nylon 6, nylon 12, and nylon 66; polyolefins such as polyethylene and polypropylene; polystyrene; polyesters such as polyethyleneterephthalate and polycarbonate; acrylic resins such as polymethyl methacrylate and butyl acrylate-MMA copolymer; epoxy resins such as cured bisphenol A-epichlorohydrin copolymer; fluorine type resins such as polytetrafluoroethylene; silicone type resins such as methylpolysiloxane and crosslinked dimethylpolysiloxane; phenolic resins such as benzoguanamine resin; vinyl resins such as polyvinyl chloride and polyvinyl methyl ether; polyurethane; cellulose; chitin; chitosan; fibroin; keratin; natural rubber; metallic soaps such as aluminum stearate, calcium stearate, magnesium stearate, zinc stearate, aluminum myristate, calcium myristate, magnesium myristate, zinc myristate, aluminum palmitate, calcium palmitate, magnesium palmitate, zinc palmitate, zinc laurate, zinc undecylenate and calcium acetate; chlorophyll; tannin powder, and flavonoid.

As the method of preparing the composite powder to be used in the present invention, for example, the composite powder can be prepared by mixing the core powder and the sheath powder by the dry process or the wet process. As the mixing device, there may be employed various mixing devices or pulverization devices such as a ball mill, pot mill, automated mortar, grinder, attritor, sand mill, ongmill, hybridizer, cosmomizer, mechanofusion system, and hybridization system.

The mixing ratio of the core powder to the sheath powder may be, in terms of weight ratio, 0.1 to 200 parts, preferably 1 to 200 parts of the outer wall powder, per 100 parts of the core powder. At a level of less than 0.1 part, the effect of the sheath powder cannot be exhibited. When a powder surface modifier is used, it is used in an amount of 0.01% to 10% by weight, based upon the core powder and the sheath powder.

In the practice of the present invention, the use of the composite powder having a modified surface is preferable from the viewpoint of the effects thereof. As a method of preparing the surface modified composite powder, the composite powder is prepared after the core powder and/or the sheath powder are surface modified; the composite powder is prepared by adding a surface modifier to the core powder and the sheath powder during the composite powder preparation step; and the surface modification is effected after the preparation of the composite powder and the like.

Typical examples of the surface modifier include oils such as ester oils, hydrocarbon oils, fatty acids, and silicone oils (e.g., methylhydrogen polysiloxane, 1,3,5,7-tetramethylcyclotetrasiloxane, dimethylpolysiloxane, methylphenylpolysiloxane); waxes such as whale wax, Japan wax, shellac, beeswax, lanolin, carnauba wax, and canderilla; coupling agents such as silane coupling agents (e.g., vinyl trichlorosilane,

ride, resorcin, phenol, sorbic acid, salicylic acid, and hexachlorophen; essential oils which are natural plant perfumes such as lavender, lemon, jasmin, mint, peppermint, rose, and camphor; animal perfumes such as musk, civet, and castoreum, and other synthetic perfumes; and a compressed gas such as carbon dioxide gas, nitrogen gas, and nitrous oxide gas.

5 The present invention provides an aerosol composition having an excellent powder dispersibility and useability by reducing the amount of Freon gas or without using Freon gas, and thus meets current requirements to restrict the use of this gas due to its influence on the ozone layer.

10 Examples

The present invention will now be further illustrated by, but is by no means limited to, the following Examples, wherein all parts and percentages are expressed on a weight basis unless otherwise noted.

Evaluation test methods used hereinbelow will be described.

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Powder dispersibility test

20 Powder and a propellant were filled in an aerosol glass bottle, and after shaking, the time in which the powder sedimented at the bottom of the bottle was measured.

Useability test

25 Each sample was sprayed on the forearm for 3 seconds, and the extendability of the powder was evaluated. The evaluation standards are as follows.

o ... very well extended and free flowing

o ... slightly extended and free flowing

Δ ... not well extended

30 x ... very poorly extended

Examples 1 - 2 and Comparative Examples 1 - 4

35 Table 1 shows Examples and Comparative Examples.

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Table 1

Starting material	Example 1	Comparative Example 1	Comparative Example 2	Example 2	Comparative Example 3	Comparative Example 4
Composite powder [spherical nylon 12 (5 μm) : silica (0.1 μm) = 70:30]	2	-	-	2	-	-
Mixed powder [spherical nylon 12 (5 μm) : silica (0.1 μm) = 70:30]	-	2	-	-	2	-
Silica (0.1 μm)	-	-	0.6	-	-	0.6
LPG (isobutane)	98	98	99.4	-	-	-
LPG (isobutane)/Freon 11, 12 (50/50) = 50/50	-	-	-	98	98	99.4
Time until sedimentation occurred after shaking (sec.)	30 sec.	15 sec.	7 sec.	34 sec.	18 sec.*	10 sec.
Useability	0	Δ	x	0	Δ	x

*only silica sedimented
specific gravity of propellant liquid (20 °C)
LPG (isobutane) 0.56
LPG/Freon (50/50) 0.98

As shown in Table 1, in Examples 1 and 2, the time taken for the powder to precipitate after shaking was remarkably lengthened. In the case of the propellant liquid with a specific gravity of 1.2 or less, those formulated with the composite powder had an extremely good dispersibility, with the sedimentation time being prolonged 3-fold to 4-fold compared to the silica formulated product of the Comparative Examples. Also, the useability of the present Examples was found to be significantly better, compared with Comparative Examples formulated with conventional silica.

Example 3: Deodorant Spray

(1)	Composite powder [spherical methylpolysiloxane (9 μm) : magnesium metasilicate aluminate (0.4 μm) : polymethyl methacrylate (0.7 μm) = 75:20:5]	5.0
(2)	Isopropyl myristate	0.6
(3)	Alcohol	10.0
(4)	Aluminum hydroxychloride	0.2
(5)	Perfume	0.2
(6)	L.P.G. (isobutane)	50.0
(7)	Freon 12	14.0
(8)	Freon 114	20.0
Average specific gravity of propellant		0.905

After the components (1) to (5) were filled in an aerosol can, a valve was mounted and crimped, and the components (6) to (8) were filled under pressure to obtain a deodorant spray. The spray had a good powder dispersibility and useability.

Example 4: Cologne Powder Spray

(1)	Composite powder [plate polyethylene (8 μm) : zinc white (0.05 μm) = 60: 40]	15.0
(2)	Perfume	3.0
(3)	Polymethylsiloxane	1.0
(4)	L.P.G. [propane (10%)/n-butane (90%)]	51.0
(5)	Dimethyl ether	30.0
Average specific gravity of propellant		0.605

After (1) to (3) were filled in an aerosol can, a valve was mounted and crimped, and the components (4) and (5) were filled under pressure to obtain a cologne powder spray. The spray was found to have a good powder dispersibility and useability.

Example 5: Deodorant Spray

(1)	Composite powder [spherical nylon 6 (7 μm) : silica (0.2 μm) = 70:30]	10.0
(2)	Benzotonium chloride	0.05
(3)	Alcohol	20.0
(4)	Basic aluminum bromide	0.5
(5)	Deionized water	5.0
(6)	Dimethyl ether	34.45
(7)	L.P.G. (isobutane)	30.0
Average specific gravity of propellant		0.613

After the components (1) to (5) were filled in an aerosol can, a valve was mounted and crimped, and the components (6) and (7) were filled under pressure to obtain a deodorant spray. The spray was found to have a good powder dispersibility and useability.

Example 6: Powder Cologne Spray

(1)	Composite powder [particulate cellulose (20 μm) : talc (2 μm) = 74:26]	3.0
(2)	Dipropylene glycol	1.0
(3)	Ethyl alcohol	53.6
(4)	Water	12.0
(5)	Camphor	0.2
(6)	Perfume	0.2
(7)	Dimethyl ether	30.0
Average specific gravity of propellant		0.66

After the components (1) to (6) were homogeneously mixed, the mixture was filled in an aerosol can and a valve was mounted and crimped. After crimping, (7) was filled under pressure to obtain a powder cologne spray. The spray was found to have a good powder dispersibility and useability.

Example 7: Deodorant Powder Spray

(1)	Composite powder [spherical polystyrene (50 μm) : hydroxyapatite (0.3 μm) = 81:19]	7.0
(2)	Ethyl alcohol	39.8
(3)	Water	10.0
(4)	Propylene glycol	3.0
(5)	Aluminum hydroxychloride (50%)	10.0
(6)	Perfume	0.2
(7)	Dimethyl ether	25.0
(8)	L.P.G. (butane)	5.0
Average specific gravity of propellant		0.65

The components (1) to (6) were homogeneously mixed and then filled in a aerosol can, and a valve was mounted and crimped, followed by filling (7) and (8) to obtain a deodorant powder spray. The spray was found to have a good powder dispersibility and useability.

Example 8: Powder Spray

(1)	Composite powder (granular tetrafluoroethylene (1 μm) : kaolin (0.1 μm) = 91:9	4.7
(2)	Ethyl alcohol	27.0
(3)	Water	9.0
(4)	Potassium glycyrrhizinate	0.1
(5)	Perfume	0.2
(6)	Freon 11/12 (80/20)	36.0
(7)	Dimethyl ether	18.0
Average specific gravity of propellant		1.19

After the components (1) to (5) were mixed, the mixture was filled in an aerosol can, and a valve was mounted and crimped, followed by filling (6) and (7) under pressure to obtain a powder spray. The spray was found to have a good powder dispersibility and useability.

Example 9: Powder Spray for Systemic Use

(1)	Composite powder [granular chitosan (30 μm) : magnesium silicate aluminate (0.5 μm) = 69:31]	10.0
(2)	Mentol	0.1
(3)	Camphor	0.2
(4)	Eucalyptus oil	0.1
(5)	Ethanol	39.6
(6)	Freon 12	10.0
(7)	Dimethyl ether	40.0
Average specific gravity of propellant		0.794

A solution of (2) to (4) dissolved in the components (1) and (5) was filled in an aerosol can and a valve was mounted and crimped, followed by filling (6) and (7) under pressure to obtain a powder spray for systemic use. The spray was found to have a good powder dispersibility and useability.

Example 10: Deodorant Cologne Spray

(1)	Composite powder [particulate fibroin (25 μm) : particulate chitin (2 μm) : light calcium carbonate (1 μm) = 69:19:12]	5.0
(2)	Trichlosane	0.1
(3)	Ethanol	30.0
(4)	Aluminum hydroxychloride (50%)	10.0
(5)	Water	10.0
(6)	Perfume	0.1
(7)	Polyoxyethylene (60 mole adduct) hardened castor oil derivative	0.5
(7)	Dimethyl ether	40.0
(8)	L.P.G. (butane)	4.3
Average specific gravity of propellant		0.652

After (2), (6) and (7) were dissolved in the components (1) and (3), (4) and (5) were added, and the mixture filled in an aerosol can. A valve was mounted and crimped, followed by filling (8) and (9) under pressure to obtain a deodorant cologne spray. The spray was found to have a good powder dispersibility and useability.

Example 11: Deodorant Powder Spray

(1)	Composite powder [spherical polymethyl methacrylat (0.5 μm) : aluminum hydroxychloride (0.05 μm)] = 60:40	15.0
(2)	Talc	1.0
(3)	Isopropyl myristate	0.5
(4)	Tetra-2-ethylhexanoic acid diglycerolsorbitane	0.5
(5)	Dimethyl ether	30.3
(6)	L.P.G.	50.0
	Average specific gravity of propellant	0.677

After the components (1) to (4) were homogeneously mixed, the mixture was filled in an aerosol can. A valve was mounted and crimped, followed by filling (5) and (6) under pressure to obtain a deodorant powder spray. The spray was found to have a good powder dispersibility and useability.

Example 12: Deodorant Spray

(1)	Composite powder [spherical crosslinked polymethyl methacrylate (15 μm) : aluminum hydroxy chloride (0.5 μm) : silicone resin = 70:26:4]	7.0
(2)	Isopropyl myristate	0.7
(3)	Ethanol	8.0
(4)	Perfume	0.1
(5)	L.P.G. [n-butane (75%)/isobutane (25%)]	84.2
	Average specific gravity of propellant	0.588

After the components (1) to (4) were uniformly mixed and filled in an aerosol can, a valve was mounted and crimped, and the component (5) was filled under pressure to obtain a deodorant spray.

Example 13: Cologne Powder Spray

(1) Composite powder [granular nylon 46 (7 μm) : basic aluminum (0.2 μm) : squalane : carnauba wax

= 80:25:2.5:2.5]	13.0
(2) Perfume	3.0
(3) Polymethylphenylsiloxane	2.0
(4) L.P.G. [n-butane (90%)/propane (10%)]	50.0
(5) Dimethyl ether	30.0
Average specific gravity of propellant	0.572

After (1) to (3) were filled in an aerosol can, a valve was mounted and crimped, and the components (4) and (5) were filled under pressure to obtain a cologne powder spray.

Example 14: Foot Spray

(1)	Composite powder [granular crosslinked polystyrene (12 μm) : aluminum citrate (0.4 μm) : calcium stearate (0.7 μm) = 64:35.2:0.8]	10.0
(2)	Composite powder [spherical benzoguanamine resin (10 μm) : zinc oxide (0.04 μm) - 75:25]	10.0
(3)	Dimethyl polysiloxane	5.0
(4)	Perfume	0.9
(5)	L.P.G. [Isobutane (80%)/propane (20%)]	74.1
	Average specific gravity of propellant	0.548

After (1) to (4) were uniformly mixed and filled in an aerosol can, a valve was mounted and crimped, and the component (5) was filled under pressure to obtain a foot spray.

The powder dispersibility and useability of the products obtained in Examples 12, 13, and 14 were evaluated as mentioned above. The results are shown in Table 2.

Table 2

	Example		
	12	13	14
Time until sedimentation occurred after shaking (sec)	123	84	98
Useability	⊙	⊙	⊙

As is clear from the results shown in Table 2, the products of Examples 12 to 14 had an excellent dispersibility and useability.

Example 15: Deodorant Spray

(1)	Composite powder [flakypolyethylene coated with high viscosity silicone (6 μm) : hexamethyldisilazane treated zinc oxide (0.2 μm) = 79:21]	11.0
(2)	Ethanol	38.0
(3)	Water	9.0
(4)	Propylene glycol	3.0
(5)	Perfume	0.3
(6)	L.P.G. [n-butane (52.5%)/isobutane (17.5%)/propane (30.0%)]	38.7
	Average specific gravity of propellant	0.553

After the components (1) to (5) were uniformly mixed and filled in an aerosol can, a valve was mounted and crimped, and the component (6) was filled under pressure to obtain a deodorant spray. The spray obtained was found to have a good powder dispersibility, useability, and deodorizing property.

Example 16: Powder Spray

(1) Composite powder [spherical cured bisphenol A-epichlorhydrin copolymer powder (18 μm) : mica coated with

	high viscosity methylphenyl poly-	
	siloxane (0.9 μm) = 61:39]	14.0
5	(2) Talc	1.2
	(3) Isopropyl myristate	0.8
	(4) L.P.G. [n-butane (45%)/isobutane	
10	(15%)/propane (40%]	84.0
	Average specific gravity of propellant	0.545

After the components (1) to (3) were uniformly mixed and filled in an aerosol can, a valve was mounted and crimped. After crimping, the component (4) was filled under pressure to obtain a powder spray. The spray was found to have a good powder dispersibility and useability.

Example 17: Powder Spray for Systemic Use

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	(1) Composite powder [granular polypropylene (18 μm) : zinc oxide (0.05 μm) : silicone resin = 71:28:1]	11.0
	(2) Mentol	0.2
25	(3) Camphor	0.1
	(4) Eucalyptus oil	0.1
	(5) Ethanol	38.6
	(6) L.P.G. [n-butane (49%)/isobutane (16%)/propane (35%)]	37.5
30	(7) Freon 11	12.5
	Average specific gravity of propellant	0.776

After the components (1) to (5) were mixed, the mixture was filled in an aerosol can, and a valve was mounted and crimped, followed by filling (6) and (7) under pressure to obtain a powder spray. The spray was found to have a good powder dispersibility and useability.

Example 18: Powder Spray

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	(1) Composite powder [spherical chitosan (20 μm) : magnesium oxide (0.6 μm) : zinc myristate (0.8 μm) = 79:20.5:0.5]	13.5
	(2) Spherical silica	0.5
45	(3) Squalane	2.5
	(4) Methylphenyl polysiloxane	2.0
	(5) Isopentane	16.3
	(6) L.P.G. [n-butane (75%)/isobutane (25%)]	65.2
50	Vapor pressure of a mixture of (5) and (6): 1.1 kg/cm ² G (gauge) at 20 °C	

The components (1) and (2) and the components (3) and (4) were separately uniformly mixed. The resultant mixtures and the component (5) were then filled in an aerosol can, and a valve was mounted and crimped, followed by filling the component (6) under pressure to obtain a powder spray.

Example 19: Foot Spray

(1)	Composite powder [granular polyvinylidene chloride (7 μm) : calcium oxide treated with perfluoroalkylphosphoric acid ester (0.9 μm) = 61:39]	13.0
(2)	Aluminum stearate	0.4
(3)	Aluminum hydroxy chloride	1.0
(4)	Octamethyl cyclotetrasiloxane	2.5
(5)	Decamethyl cyclopentasiloxane	2.5
(6)	n-pentane	48.36
(7)	LPG [propane (43%)/isobutane (16%)/n-butane (41%)]	32.24
Vapour pressure of a mixture of (6) and (7): 1.4 kg/cm ² G (20 ° C)		

The components (1) to (3) and the components (4) and (5) were separately uniformly mixed and then filled, together with the component (6), in an aerosol can, and a valve was mounted and crimped, followed by filling the component (7) under pressure to obtain a foot spray.

Claims

1. An aerosol composition comprising a composite powder and at least one propellant selected from the group consisting of propane, n-butane, isobutane, a liquefied petroleum gas, a chlorinated hydrocarbon, and dimethyl ether.

2. An aerosol composition as claimed in claim 1, further comprising a Freon gas.

3. An aerosol composition as claimed in claim 1, wherein the composite powder comprises a core powder coated on the surface thereof with a sheath powder.

4. An aerosol composition comprising at least one propellant selected from the group consisting of propane, n-butane, isobutane, and a liquefied petroleum gas, at least one solvent selected from the group consisting of n-pentane, isopentane, and n-hexane, and a composite powder.

5. An aerosol composition as claimed in claim 4, wherein the vapor pressure of a mixture of the propellant and the solvent is 0.1 to 2.5 kg/cm²G at 20 ° C.

6. An aerosol composition as claimed in claim 4, further comprising a Freon gas.

7. An aerosol composition as claimed in claim 4, wherein the composite powder comprises a core powder coated on the surface thereof with a sheath powder.



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	SEIFEN-OLE-FETRE-WACHSE, vol. 98, no. 15, 20th July 1972, pages 489-491; W. LANZENDORF: "Aerosole-technische Hinweise zu Puderaerosolen und Aerosol-Treibmitteln" * Page 490: "Aerosol-Treibmittel" * ---	1,3,4,7	C 09 K 3/30
X	GB-A-2 029 441 (TOYO AEROSOL) * Claims 1,10 * ---	1,4	
A	US-A-3 494 871 (CLAPP) * Claim 1; column 2, lines 43-50 * -----	1,4	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			C 09 K
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18-07-1989	Examiner NICOLAS H.J.F.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			

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